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OSAWA TOMOYOSHI

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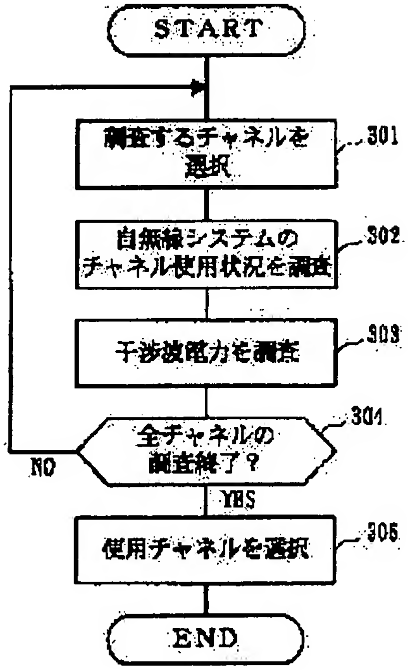
(54) CHANNEL SELECTION METHOD

(57)Abstract:

PROBLEM TO BE SOLVED: To allow its own radio communication system and other radio communication system to effectively use a frequency band in common.

SOLUTION: A channel utilizing state of its own radio communication system is investigated for each channel being a selection object (step 302), for example, interference power as a channel utility state of other radio communication system is investigated (step 303) and a channel used for radio communication in its own radio communication system is selected based on the investigation result of all channels being selection objects.



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[Date of final disposal for application]	
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[Date of registration]	
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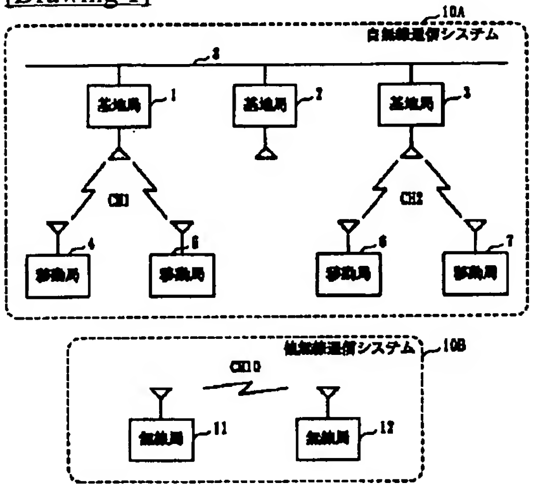
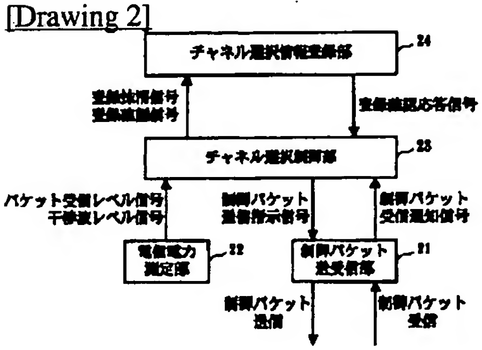
DRAWINGS

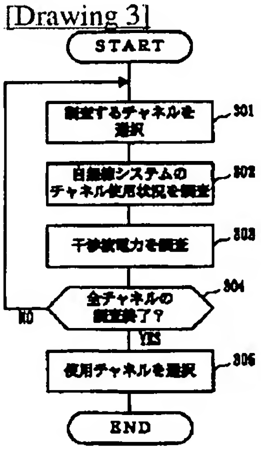
[Drawing 1]


10A
自無線通信システム
8
基地局
1
基地局
2
基地局
3
CH1
CH2
4
5
6
7
移動局
移動局
移動局
移動局
他無線通信システム
10B
CH10
無線局
11
無線局
12

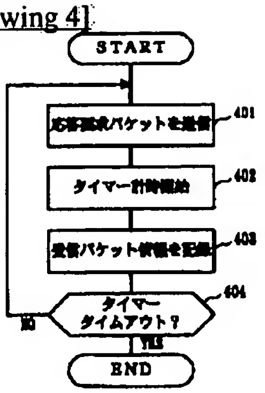
[Drawing 2]


チャネル選択情報登録部
24
登録依頼信号
登録確認信号
登録確認応答信号
チャネル選択制御部
23
パケット受信レベル信号
干渉波レベル信号
制御パケット
送信指示信号
制御パケット
受信通知信号
受信電力
測定部
22
制御パケット
送受信部
21
制御パケット
送信
制御パケット
受信

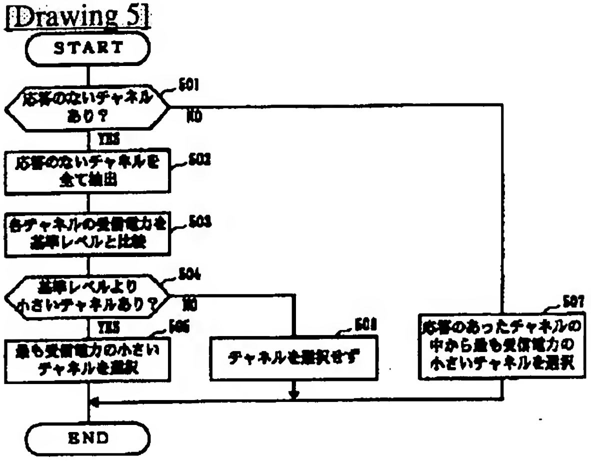
[Drawing 3]


START
測定するチャネルを
選択
301
自無線システムの
チャネル使用状況を測定
302
干渉波電力を測定
303
全チャネルの
測定終了？
304
NO
YES
使用チャネルを選択
305
END

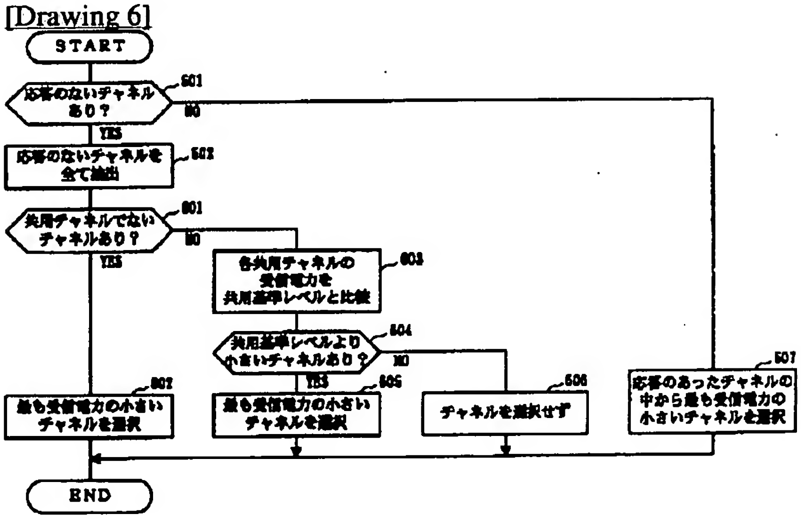
[Drawing 4]


START
応答要求パケットを送信
401
タイマー計時開始
402
受信パケット情報を記録
403
タイマー
タイムアウト？
404
NO
YES
END

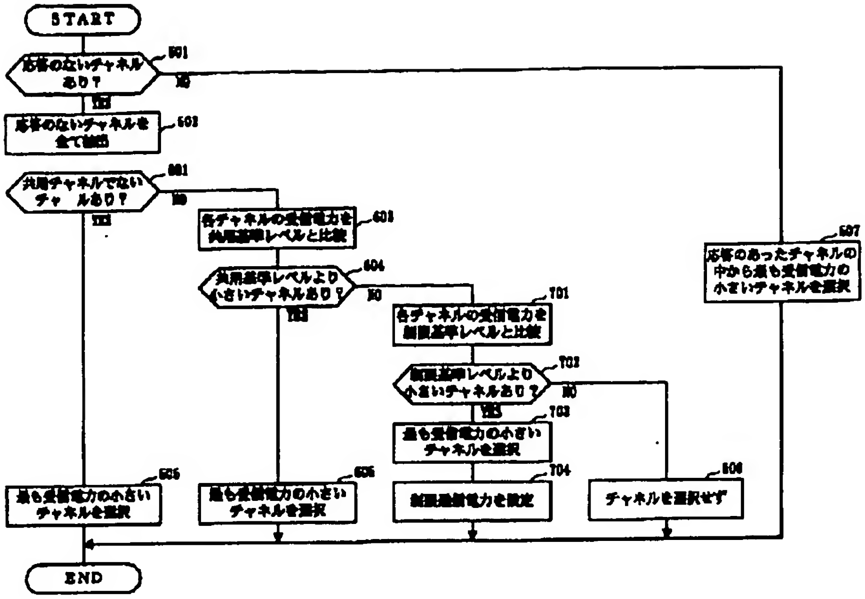
[Drawing 5]


START
応答のないチャネルあり？
501
NO
YES
応答のないチャネルを全て抽出
502
各チャネルの受信電力を基準レベルと比較
503
基準レベルより小さいチャネルあり？
504
NO
YES
最も受信電力の小さいチャネルを選択
505
チャネルを選択せず
506
応答のあったチャネルの中から最も受信電力の小さいチャネルを選択
507
END

[Drawing 6]


START
応答のないチャネルあり？
601
NO
YES
応答のないチャネルを全て抽出
602
共用チャネルでないチャネルあり？
801
NO
YES
各共用チャネルの受信電力を共用基準レベルと比較
803
共用基準レベルより小さいチャネルあり？
604
NO
YES
最も受信電力の小さいチャネルを選択
802
最も受信電力の小さいチャネルを選択
605
チャネルを選択せず
606
応答のあったチャネルの中から最も受信電力の小さいチャネルを選択
607
END

[Drawing 7]


START
応答のないチャネルあり？
501
NO
YES
応答のないチャネルを全て抽出
502
共用チャネルでないチャ ルあり？
601
NO
YES
各チャネルの受信電力を共用基準レベルと比較
603
共用基準レベルより小さいチャネルあり？
604
NO
YES
各チャネルの受信電力を制限基準レベルと比較
701
制限基準レベルより小さいチャネルあり？
702
NO
YES
最も受信電力の小さいチャネルを選択
703
応答のあったチャネルの中から最も受信電力の小さいチャネルを選択
507
最も受信電力の小さいチャネルを選択
505
最も受信電力の小さいチャネルを選択
605
制限送信電力を設定
704
チャネルを選択せず
506
END

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[The technical field to which invention belongs] this invention relates to the channel selection method which chooses from from the channel used at the time of radio among two or more channels for selection containing the channel in which it is used, overlapping and deals with two or more radio communications systems especially about the channel selection method of a radio communications system.
[0002]
[Description of the Prior Art] In recent years, there is a wireless LAN system as a radio communications system currently examined as a system which realizes high-speed-data transmission by radio. In this kind of wireless LAN system, one radio link consists of two or more radio stations, and one radio channel (henceforth a channel) is being used for each radio station which constitutes a radio link in common by CSMA/CA (Carrier SenseMultiple Access with Collision Avoidance).

[0003] Here, according to the CSMA/CA, each radio station is not transmitting by judging that other radio stations are using the channel, when it is over level with the interference wave power level of the signal from other radio stations. Therefore, in order for a radio communications system like a wireless LAN system to perform efficient communication, it becomes important to choose a channel so that the interference wave from radio stations other than the radio station which constitutes the radio link may not be received as much as possible.

[0004] In this case, as a radio station which transmits the signal used as an interference wave, two kinds, the radio station which constitutes other radio links in the self-radio communications system which is using the same channel, and the radio station of other radio communications systems which are using the same frequency band, can be considered. The technology for avoiding conventionally the interference from the radio which forms a different radio link in such a wireless LAN system is proposed (for example, references, such as the collection of "proposal of packet DCA for wireless LAN" 1996 [besides Ishii], and electronic-intelligence communication society society convention drafts, and B-652).

[0005] When arbitrary radio stations form a radio link newly and the control packet which sent and received the control packet and was returned from other radio stations according to this is received, this Interference with other radio stations of a self-radio communications system is avoided by judging that the channel is used by other radio stations of a self-radio communications system, and choosing the channel which did not receive the control packet from other radio stations.

[0006] It judges whether the channel is used by other radio communications systems by detecting the receiving level of an input signal, signal length, and periodicity as radio equipment which can, on the other hand, avoid the interference from the radio station of a different radio communications system which is sharing the frequency band, and what avoided use of the channel used by other radio communications systems is proposed (for example, references, such as JP,4-189700,A).
[0007]
[Problem(s) to be Solved by the Invention] however, by such channel selection method of the conventional radio communications system Since either a means to detect the existence of the interference from the radio station of a self-radio communications system, or a means to measure the interference wave from the radio station of other radio communications systems is equipped with the former and the latter, A channel from which the influence of the interference wave from a different radio station which belongs to a self-radio communications system and other radio communications systems, respectively serves as the minimum could

not be chosen, but there was a trouble that a frequency band could not be used mutually efficiently, with a self-radio communications system and other radio communications systems.

[0008] Especially, by the former channel selection method, although the busy condition of a channel is judged by the control packet, when it does not restrict using the same control packet with other radio communications systems, and the same control packet is used and communication modes differ, it does not receive correctly and the control packet of other radio communications systems cannot necessarily be analyzed. Therefore, the former channel selection method is inapplicable to the both sides of a self-radio communications system and other radio communications systems.

[0009] Moreover, by the latter channel selection method, since the operating condition of a channel is judged by detecting the receiving level of an input signal, signal length, and periodicity, the interference can distinguish the thing from other radio communications systems, and the thing from other radio stations of a self-radio communications system, and cannot judge it. Therefore, the latter channel selection method is inapplicable to the both sides of a self-radio communications system and other radio communications systems. this invention is for solving such a technical problem, and it aims at offering the channel selection method of the radio communications system which can share a frequency band effective in mutual with a self-radio communications system and other radio communications systems.

[0010]

[Means for Solving the Problem] In order to attain such a purpose, this invention In the state where the self-radio communications system and other radio communications systems which consist of two or more radio stations, respectively are intermingled In the radio communications system which chooses the channel used at the time of the radio in a self-radio communications system from two or more channels for selection containing the channel used also from other radio communications systems The channel operating condition of each channel for selection by the self-radio communications system, The channel operating condition of each channel for selection by other radio communications systems is investigated, and the channel used from the channel for selection based on these results of an investigation at the time of the radio in a self-radio communications system is chosen. Therefore, a channel is chosen based on the results of an investigation of the both sides of the operating condition of each channel for selection by the self-radio communications system, and the operating condition of each channel for selection by other radio communications systems.

[0011] Moreover, as investigation of the channel operating condition of the channel for selection by other radio communications systems, the interference wave power of each channel for selection is detected, and interference wave power chooses the smallest channel among the channels for selection of an intact state with the self-radio communications system extracted based on the channel operating condition of the channel for selection by the self-radio communications system. Moreover, predetermined reference level is set up beforehand and the channel used at the time of the radio in a self-radio communications system is chosen from from among channels with the interference wave power of each channel smaller than predetermined reference level.

[0012] Moreover, the common channel with other radio communications systems is registered beforehand, and priority is given to channels other than a common channel, and it is made to choose. Moreover, predetermined common reference level is set up beforehand and the channel used at the time of the radio in a self-radio communications system is chosen from from among channels with the interference wave power of each common channel smaller than predetermined common reference level.

[0013] Moreover, predetermined limit reference level is set up beforehand, and when the interference wave power of each channel is larger than predetermined reference level, among those while interference wave power chooses a channel smaller than predetermined limit reference level, low limit transmitted power is set up from usual as transmitted power in the channel. Moreover, common reference level, limit reference level, or limit transmitted power is individually set up for every channel for selection.

[0014]

[Embodiments of the Invention] Next, this invention is explained with reference to a drawing. Drawing 1 is the schematic diagram showing the radio communications system which is the gestalt of operation of the 1st of this invention, in this drawing, it is set to self-radio communications system 10A which consists of two or more base stations besides the base stations 1-3 connected to the cable network 8, and two or more mobile stations besides mobile stations 4-7 from two or more radio stations besides radio stations 11 and 12, and also radio communications system 10B is intermingled. In addition, a radio station shall point out the thing containing all the equipments that perform radio, such as a base station and a mobile station.

[0015] Two or more mobile stations besides mobile stations 3 and 4 communicate by connecting with a base station 1. A base station 1 communicates using CH1 which is the channel which the base station 1 uses, when two or more mobile stations linked to the base station 1 besides mobile stations 3 and 4 communicate mutually, while communicating using two or more mobile stations linked to a local station besides mobile stations 3 and 4, and a single channel (CH1).

[0016] Similarly, two or more mobile stations besides mobile stations 6 and 7 communicate by connecting with a base station 3. A base station 3 communicates using CH2 which is the channel which the base station 3 uses, when two or more mobile stations linked to the base station 3 besides mobile stations 6 and 7 communicate mutually, while communicating using two or more mobile stations linked to a local station besides mobile stations 6 and 7, and a single channel (CH2).

[0017] In addition, CH1 and CH2 may be the same channels. Here, a channel shall point out the frequency band used when communicating on radio. On the other hand, radio stations 11 and 12 differ in base stations 1-3 and mobile stations 4-7, and also constitute radio communications system 10B, and communicate using a single channel (CH10) or two or more single channels.

[0018] In addition, in addition to this, CH10 used by other radio communications system 10B and two or more channels may be the same channels as the channel used in self-radio communications system 10A, such as CH1 and CH2. Furthermore, these channels may be channels over the frequency band of two or more channels which a part of channel used in self-radio communications system 10A, such as CH1 and CH2, and frequency band have lapped, or are used in self-radio communications system 10A.

[0019] Drawing 2 is the block diagram showing the channel selection processing section with which the base stations 1-3 in drawing 1 are equipped. The channel selection processing section has the control packet transceiver section 21, the received-power test section 22, the channel selection control section 23, and the channel selection information registration section 24. While the control packet transceiver section 21 transmitted the control packet for channel selection control by the control packet transmitting indication signal from the channel selection control section 23, when the control packet from other radio stations is received, it notifies the content of the packet to the channel selection control section 23 using a control packet receipt signal.

[0020] The received-power test section 22 supervises each selectable radio circuit, i.e., each channel for selection, at the time of radio, and notifies the received power for every packet, and the interference wave power for every channel to the channel selection control section 23 as a packet receiving level signal or an interference wave level signal. Here, the level of interference wave power shall be given by carrying out the time average of the received power of each channel.

[0021] Based on the receiving state and received power of a control packet, the channel selection control section 23 chooses from from the channel which investigates the operating condition of each channel for selection, and is used by the local station among each channel for selection, and sets it up. The channel selection information registration section 24 stores the control information set up by a user or the manufacturer for every channel, and notifies the situation of the channel using a registration-confirmed reply signal to the registration-confirmed signal from the channel selection control section 23 while it carries out record storing of the situation of each channel notified by the registration deletion signal from the channel selection control section 23.

[0022] Next, with reference to drawing 1 -3, the primitive operation procedure of the channel selection in a base station is explained as operation of this invention. Here, the case where a channel is chosen in the base station 2 of drawing 1 is explained to an example. First, in order to choose one non-investigated channel arbitrary [from] among two or more channels for selection (Step 301) and to investigate the channel operating condition by other radio stations of self-radio communications system 10A, a control packet is sent [the channel selection control section 23 of a base station 2] and received among other radio stations of self-radio communications system 10A (Step 302).

[0023] Then, in order to investigate the channel operating condition (situation of other radio stations of self-radio communications system 10A which a control packet has not sent and received correctly by the problem of communication environment, like distance is still further) in other radio communications system 10B, the interference wave power of the channel is detected and it records on the channel selection information registration section 24 (Step 303). In addition, it is also possible to replace the processing sequence of Step 302 and Step 303.

[0024] Thus, it investigates about the arbitrary selected channels, and it judges whether investigation of all the channels used as the candidate for selection was conducted (Step 304), when it is not investigation ending, it returns to (Step 304:NO) and Step 301, and other one non-investigated channel is chosen [from] among the channels used as the candidate for selection (Step 301), and it investigates by the above-mentioned step 302,303.

[0025] Moreover, when investigation of all the channels used as the candidate for selection is completed, the channel used based on (Step 304:YES) and the results of an investigation of each channel, i.e., the existence of the response from the radio station of self-radio communications system 10A, and the level of interference wave power is chosen (Step 305). In addition, about the example of a channel selection procedure here, it mentions later with reference to drawing 5 -7.

[0026] Thus, since the both sides of the channel operating condition of self-radio communications system 10A and the channel operating condition of other radio communications system 10B are questioned and the channel was chosen based on these results, even when two or more radio communications systems are intermingled, interference with self-radio communications system 10A and other radio communications system 10B can be avoided, a channel can be chosen, and a frequency band can be shared effective in mutual in both radio communications systems (claim 1).

[0027] Next, with reference to drawing 4 , the example of the procedure (drawing 3 : step 302) which investigates the operating condition of the channel by the self-radio communications system is explained in detail. The base station 2 which performs a channel selection first reports the control packet (following and response demand packet) which requires a response from other radio stations of self-radio communications system 10A using the channel for investigation (Step 401). In addition, other base stations and mobile stations of self-radio communications system 10A which received the response demand packet shall answer a letter in a predetermined response packet here.

[0028] A base station 2 starts the timer which clocks a predetermined period after response packet transmission (Step 402). The measuring time of this timer shall be set as the control information registration section 24. Then, the newest information notified by each response packet which received is recorded on the control information registration section 24 until a timer carries out a time-out (Step 404: YES) (Step 403).

[0029] Information, such as a Media Access Control Address for distinguishing a transmitting agency radio station, and the information which shows the received power of the response packet which is notified from the received-power test section 22, and which received shall be recorded on a response packet. Then, according to the time-out (Step 404: YES) of a timer, a series of processings, i.e., processing of Step 302, are ended.

[0030] In addition, you may make it each radio station report a response packet periodically as another operation gestalt of Step 302. Thereby, according to reception of the response packet reported from other radio stations, information, such as a Media Access Control Address for distinguishing a transmitting agency radio station, and the newest information which shows the received power of the response packet which is notified from the received-power test section 22, and which received become what is recorded on the control information registration section 24 serially, and each radio station can shorten the processing time while being able to omit transmission of the response demand packet of Step 401.

[0031] Next, with reference to drawing 5 , the example of the channel selection procedure (drawing 3 : step 305) based on results of an investigation is explained in detail. It judges whether the base station 2 which performs a channel selection had first the channel which did not receive a response packet (Step 501), when there is a channel which did not receive a response packet, it judges that it is the channel, i.e., the channel of an intact state, for which (Step 501:YES) and its channel are not used in other radio stations of a self-radio communications system, and all the channels that did not receive a response packet are extracted (Step 502).

[0032] And the interference wave power of each extracted channel is compared with the reference level beforehand registered into the channel selection information registration section 24 (Step 503), and when the channel of the interference wave power which is less than reference level exists, (Step 504:YES), among those possibility that interference wave power is most used by other radio communications system 10B small choose a low channel (Step 505), and end a series of processings 305, i.e., a step.

[0033] On the other hand, when there is no channel which is less than reference level, a channel is not chosen (Step 506) but a series of processings are ended. In addition, you may shift to Step 505 after Step 502. Moreover, in Step 501, when a response packet is received from all channels, the received power of a response packet chooses the minimum channel from (Step 501:NO) and all channels (Step 505), and a series of processings are ended.

[0034] Thus, since interference wave power chose the smallest channel among the channels for selection of an intact state by self-radio communications system 10A (Step 501,502,505), it is in an intact state in self-radio communications system 10A, and possibility of being used by other radio communications system 10B can choose a low channel exactly most (claim 2).

[0035] Moreover, it is the channel for selection of an intact state in self-radio communications system 10A, and since the channel used at the time of radio was chosen from from among channels with interference wave power smaller than reference level (Steps 501-504), the channel which can communicate good can be chosen exactly, interference wave power being smaller than reference level, and suppressing [it is intact at self-radio communications system 10A, and] the interaction between self-radio communications system 10A and other radio communications system 10B (claim 3).

[0036] In addition, since interference wave power chose the smallest channel (Steps 501-505), it is intact at self-radio communications system 10A, and interference wave power is smaller than reference level, the interaction between self-radio communications system 10A and other radio communications system 10B is the lowest, and the channel which can communicate good can be chosen exactly (claim 3-claim 9).

[0037] Furthermore, since interference wave power chose the smallest channel among each channel for selection when all the channels for selection were busy conditions in self-radio communications system 10A (Step 501,507), even if all the channels for selection are busy conditions in self-radio communications system 10A, possibility of being used by other radio communications system 10B can choose a low channel exactly most (claim 4).

[0038] Next, with reference to drawing 6 , other examples of the channel selection procedure (drawing 3 : step 305) based on results of an investigation are explained in detail. Here, it shall be beforehand registered into the channel selection information registration section 24 as common channel information, the channel, i.e., the common channel, which may be used also from other radio communications system 10B (refer to drawing 1), and any channels other than a common channel shall not be used by other radio communications system 10B.

[0039] In addition, drawing 6 replaces only Steps 503-505 of drawing 5 mentioned above, and other steps are the same as that of drawing 5 . It judges whether when the channel which does not receive a response packet exists first (Step 501: YES), the base station 2 which performs a channel selection extracts all the channels, i.e., the channel of an intact state, that did not receive a response packet (Step 502), among those has the channel which is not a common channel (Step 601).

[0040] Here, when the channel which is not a common channel exists, a channel with the smallest interference wave power is chosen from (Step 601:YES) and those channels (Step 602), and a series of processings 305, i.e., a step, are ended. On the other hand, the case of a common channel compares the interference wave power of (Step 601:NO) and all the common channels of an intact state with the common reference level currently recorded on the channel selection information registration section 24 altogether (Step 603).

[0041] Consequently, when the channel in which interference wave power is less than common reference level exists, interference wave power chooses the minimum channel (Step 604:YES) and in it (Step 605), and a series of processings are ended. Moreover, when the channel in which interference wave power is less than common reference level in Step 604 does not exist, (Step 604:NO) and a channel are not chosen (Step 606), but a series of processings are ended.

[0042] In addition, you may be made to shift to Step 605 after step 601:YES. Thus, since it is the channel of an intact state in self-radio communications system 10A and interference wave power chose the smallest channel among channels other than a common channel when the channel shared by other radio communications system 10B was found beforehand (Step 501,502,601,602), the channel of an intact state can be exactly chosen by self-radio communications system 10A and other radio communications system 10B (claim 5).

[0043] moreover, are the common channel of an intact state in self-radio communications system 10A, and interference wave power among channels smaller than common reference level [from] Since the channel used at the time of radio was chosen (Steps 501,502,601-604) It is the common channel of an intact state in self-radio communications system 10A, and the channel which can communicate good can be chosen exactly, interference wave power being small and suppressing the interaction between self-radio communications system 10A and other radio communications system 10B from common reference level, (claim 6).

[0044] In addition, since interference wave power chose the smallest channel (Steps 501,502,601-605), with small interference wave power, the interaction between self-radio communications system 10A and other radio communications system 10B is the lowest, and can choose from common reference level exactly the channel which can communicate good (claim 6-claim 9).

[0045] In addition, common reference level may set up an individual value for every channel. Thereby, even when two or more other radio communications system 10B exists further and the degrees of influence differ [the difference in a multiplicity with the frequency band of other radio communications system 10B, the difference in a communication mode, and], the optimal selection condition can be set up for every channel (claim 10).

[0046].Next, with reference to drawing 7 , other examples of the channel selection procedure (drawing 3 : step 305) based on results of an investigation are explained in detail. Here, it shall be registered into the channel selection information registration section 24 as common channel information, the channel, i.e., the common channel, which may be used also from other radio communications system 10B (refer to drawing 1), and any channels other than a common channel shall not be used by other radio communications system 10B.

[0047] In addition, drawing 7 shows only the portion replaced by Step 506 of drawing 6 mentioned above, and other steps are the same as that of drawing 6 . The base station 2 which performs a channel selection is compared with the limit reference level which all the channels that are not used by self-radio communications system 10A are common channels, and is recorded on the interference wave power of (Step 604:NO) and these common channel, and the channel selection information registration section 24 when the interference wave power of these common channel is over common reference level in Step 604 (Step 701).

[0048] Here, when the channel which is less than limit reference level exists, while interference wave power chooses the minimum channel from (Step 702:YES) and its channel (Step 703), as transmitted power in the case of using this channel, from usual, low predetermined limit transmitted power is set up (Step 704), and a series of processings 305, i.e., a step, are ended.

[0049] When this chooses the channel currently used in other radio communications system 10B, the influence which it has on other radio communications system 10B can be suppressed by stopping transmitted power (claim 8). In addition, although drawing 7 explained the case where it applied to Step 506 of drawing 6 mentioned above to the example, you may apply to Step 506 of drawing 5 , and the same operation effect as the above-mentioned is acquired (claim 7).

[0050] On the other hand, when the channel which is less than limit reference level does not exist, (Step 702:NO) and a channel are not chosen (Step 506), but a series of processings are ended. Here, limit reference level may set up an individual value for every channel (claim 11).

[0051] Moreover, it is also possible to set up individually the limit transmitted power in the channel then used the whole channel. Thereby, even when two or more other radio communications system 10B exists further and the degrees of influence differ [the difference in a multiplicity with the frequency band of other radio communications system 10B, the difference in a communication mode, and], the optimal selection condition can be set up for every channel (claim 12).

[0052]

[Effect of the Invention] As explained above, this invention investigates the both sides of the channel operating condition of each channel for selection by the self-radio communications system, and the channel operating condition of each channel for selection by other radio communications systems, and chooses the channel used based on these results of an investigation at the time of the radio in a self-radio communications system. Therefore, even when two or more radio communications systems are intermingled, interference with other radio stations of a self-radio communications system and other radio stations of other radio communications systems can be avoided if possible mutually, the channel used at the time of the radio in a self-radio communications system can be chosen, and a frequency band can be effectively shared with both radio communications systems.

[Translation done.]

* NOTICES *

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1. This document has been translated by computer.So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]

[Claim 1] In the state where the self-radio communications system and other radio communications systems which consist of two or more radio stations, respectively are intermingled In the radio communications system which chooses the channel used at the time of the radio in a self-radio communications system from two or more channels for selection containing the channel used also from other radio communications systems The channel operating condition of each channel for selection by the self-radio communications system, The channel selection method characterized by choosing the channel which investigates the channel operating condition of each channel for selection by other radio communications systems, and is used from the channel for selection based on these results of an investigation at the time of the radio in a self-radio communications system.

[Claim 2] The channel selection method that interference wave power is characterized by choosing the smallest channel among the channels for selection of an intact state with the self-radio communications system which detected the interference wave power of each channel for selection, and was extracted in the channel selection method according to claim 1 based on the channel operating condition of the channel for selection by the self-radio communications system as investigation of the channel operating condition of the channel for selection by other radio communications systems.

[Claim 3] In the channel selection method according to claim 1, as investigation of the channel operating condition of the channel for selection by other radio communications systems It is the channel for selection of an intact state in the self-radio communications system which detected the interference wave power of each channel for selection, and was checked based on the channel operating condition of the channel for selection by the self-radio communications system. And the channel selection method which extracts a channel with interference wave power smaller than predetermined reference level, and is characterized by choosing from from the channel used at the time of the radio in a self-radio communications system among the extracted channels.

[Claim 4] When the interference wave power of each channel for selection is detected and all the channels for selection are checked with a self-radio communications system in the channel selection method according to claim 1 based on the channel operating condition of the channel for selection by the self-radio communications system as investigation of the channel operating condition of the channel for selection by other radio communications systems as it is a busy condition, it is the channel selection method characterized by interference wave power choosing the smallest channel.

[Claim 5] In the channel selection method according to claim 1, register beforehand the common channel shared with both radio communications systems as common channel information, and as investigation of the channel operating condition of the channel for selection by other radio communications systems It is the channel for selection of an intact state in the self-radio communications system which detected the interference wave power of each channel for selection, and was checked based on the channel operating condition of the channel for selection by the self-radio communications system. And the channel selection method that the channel which is not registered as a common channel is extracted and interference wave power is characterized by choosing the smallest channel among the extracted channels.

[Claim 6] It is the channel selection method which is the common channel of an intact state in these self-radio communications system, and extracts a channel with interference wave power smaller than the common reference level set up beforehand, and is characterized by choosing from from the channel used at the time of the radio in a self-radio communications system among the extracted channels in the channel selection method according to claim 5 when all the channels for selection of an intact state are common channels in a self-radio communications system.

[Claim 7] In the channel selection method according to claim 3, predetermined limit reference level higher than reference level is set up beforehand. With a self-radio communications system, when there is no channel with interference wave power smaller than reference level among the channels for selection of an intact state Are the channel for selection of an intact state in a self-radio communications system, and interference wave power extracts a channel smaller than limit reference level. The channel selection method characterized by setting up low transmitted power from usual as transmitted power in the channel while choosing from from the channel used at the time of the radio in a self-radio communications system among the extracted channels.

[Claim 8] In the channel selection method according to claim 6, predetermined limit reference level higher than common reference level is set up beforehand. With a self-radio communications system, when there is no channel with interference wave power smaller than common reference level among the channels for selection of an intact state Are the channel for selection of an intact state in a self-radio communications system, and interference wave power extracts a channel smaller than limit reference level. The channel selection method characterized by setting up low limit transmitted power from usual as transmitted power in the channel while choosing from from the channel used at the time of the radio in a self-radio communications system among the extracted channels.

[Claim 9] The channel selection method characterized by interference wave power choosing from from among the extracted channels in the channel selection method of a claim 3 and six to 8 publication as a channel which uses the smallest channel at the time of the radio in a self-radio communications system.

[Claim 10] The channel selection method characterized by using the value individually set up for every channel for selection as common reference level in the channel selection method according to claim 6 or 8.

[Claim 11] The channel selection method characterized by using the value individually set up for every channel for selection as limit reference level in the channel selection method according to claim 7 or 8.

[Claim 12] The channel selection method characterized by using the value individually set up for every channel for selection as limit transmitted power in the channel selection method according to claim 7 or 8.

[Translation done.]